

FIG. 1
Background

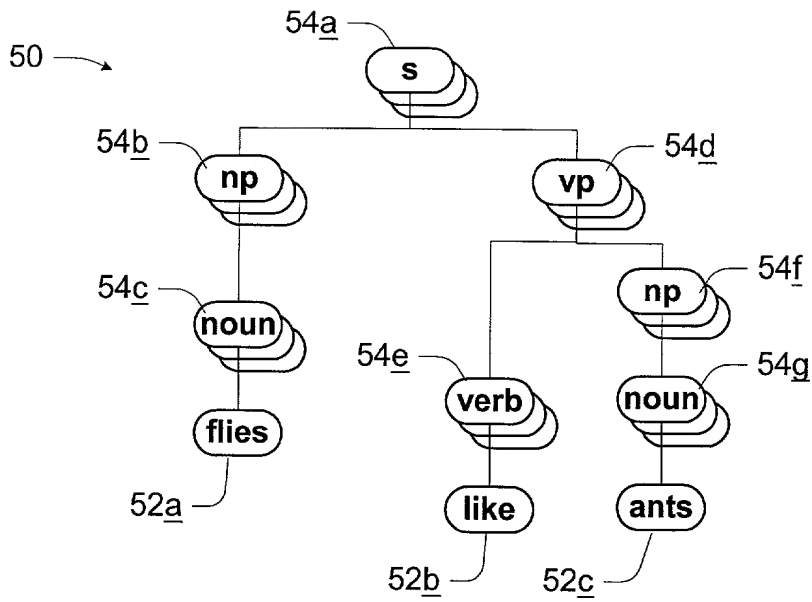


FIG. 2
Background

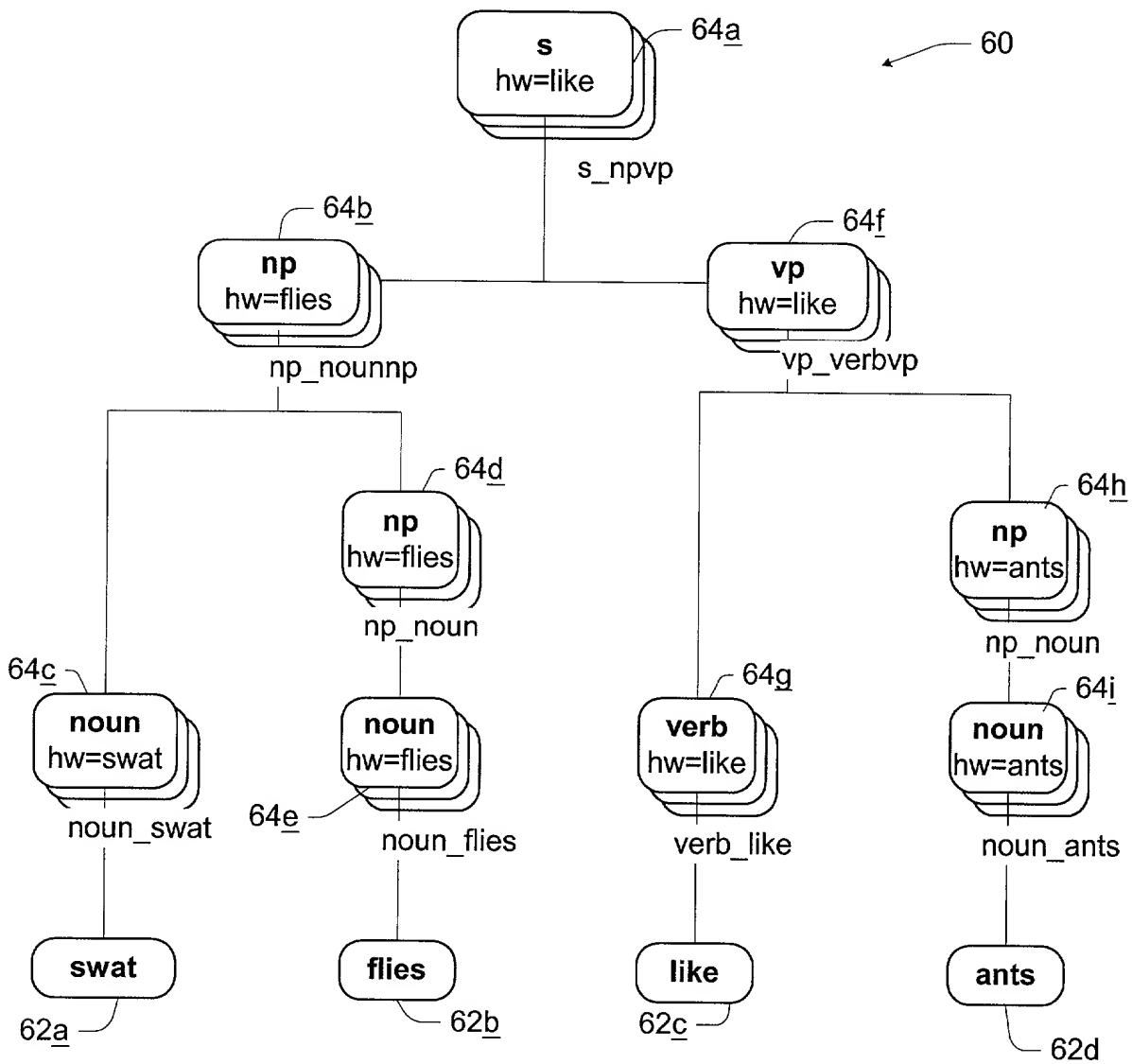


FIG. 3
Background

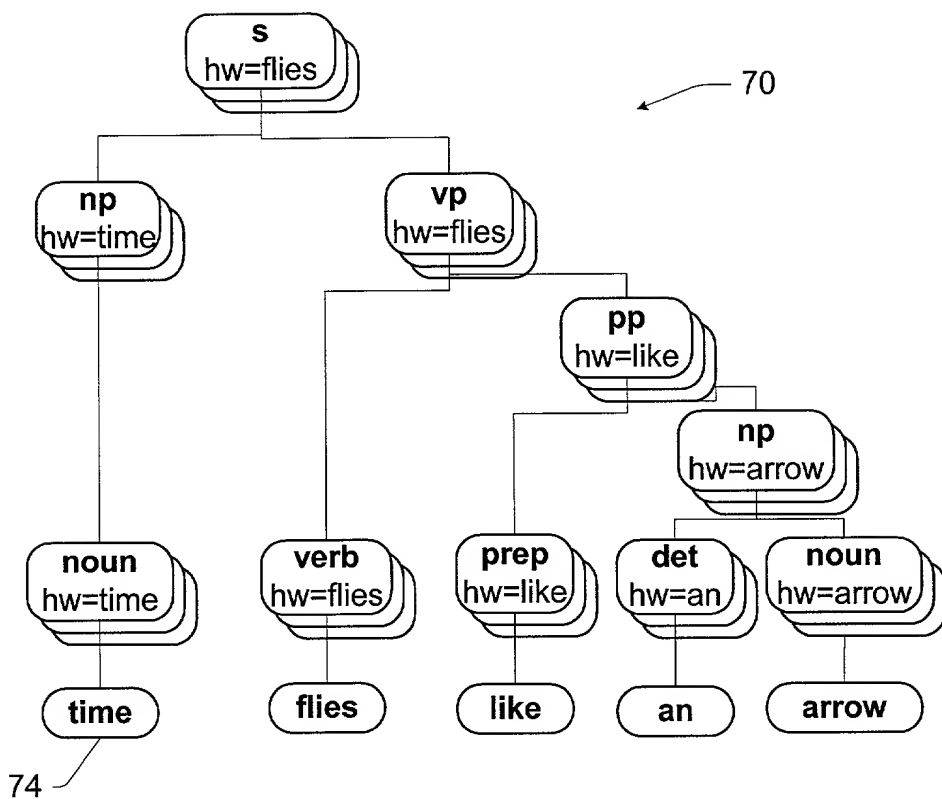


FIG. 4a

Background

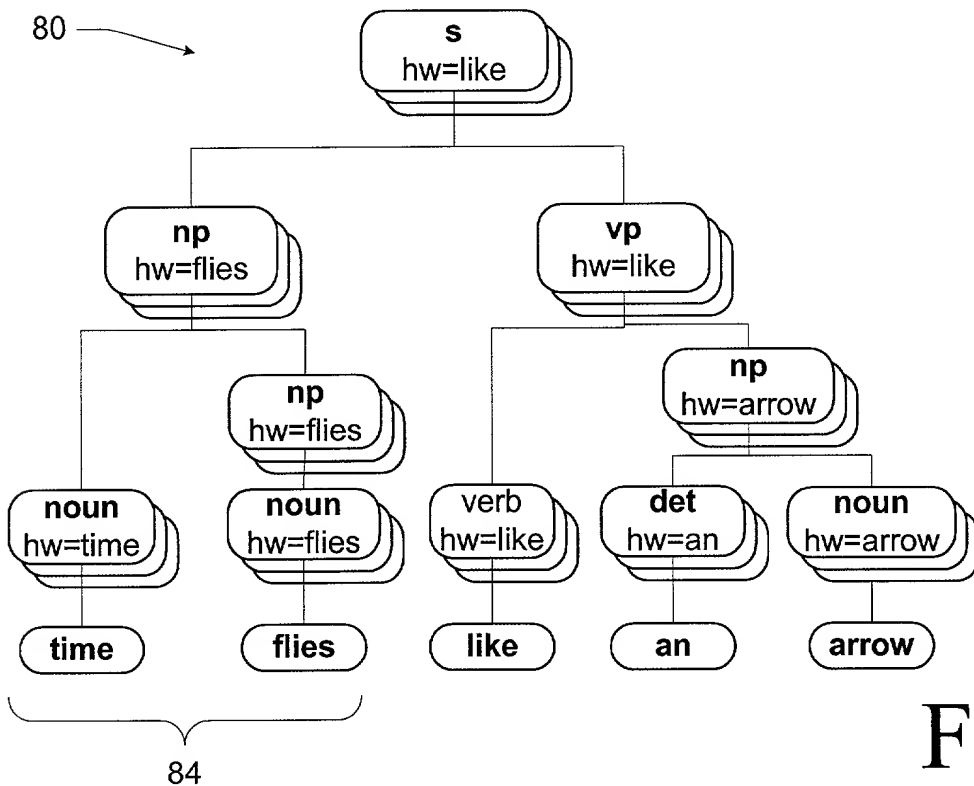


FIG. 4b

Background

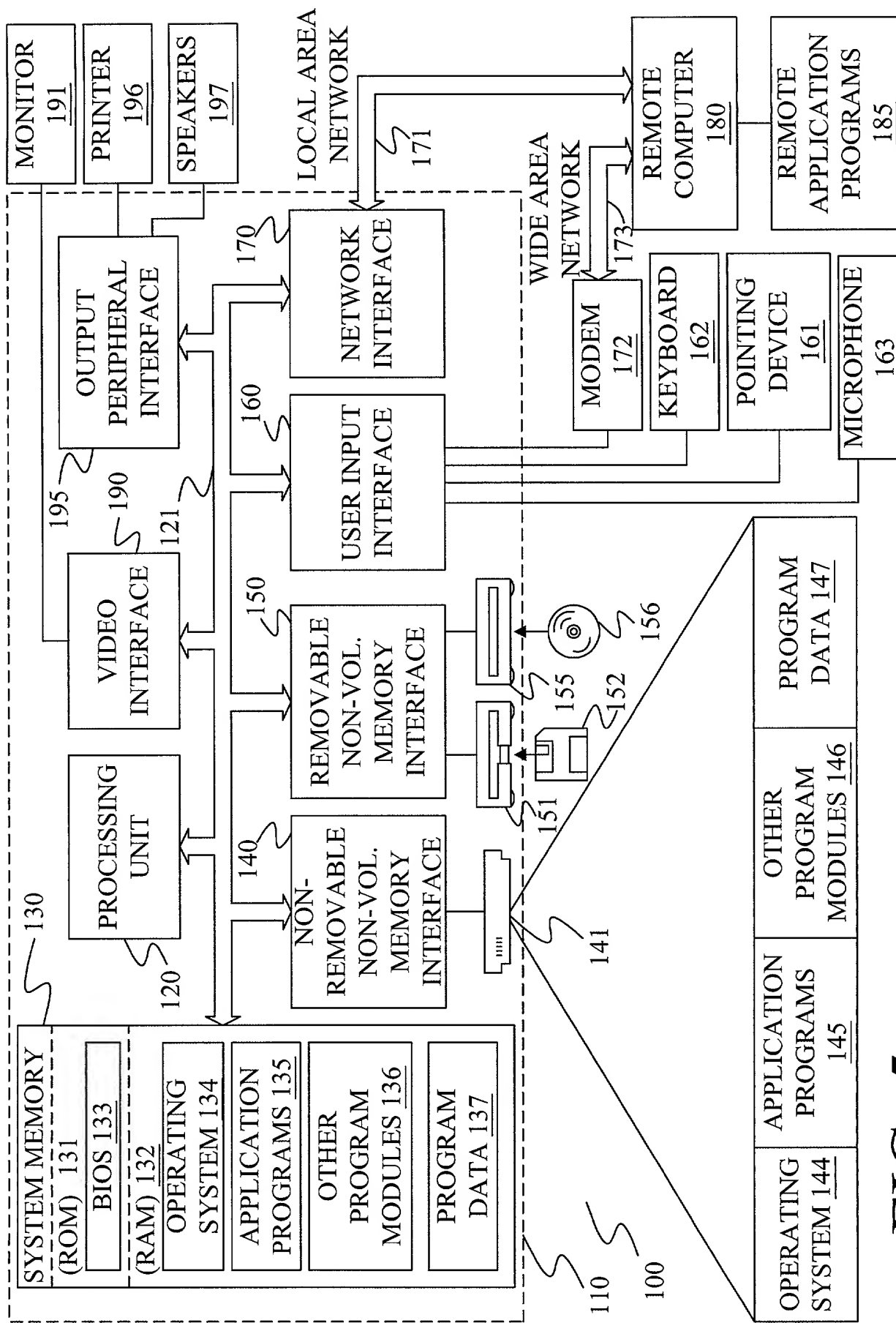


FIG. 5

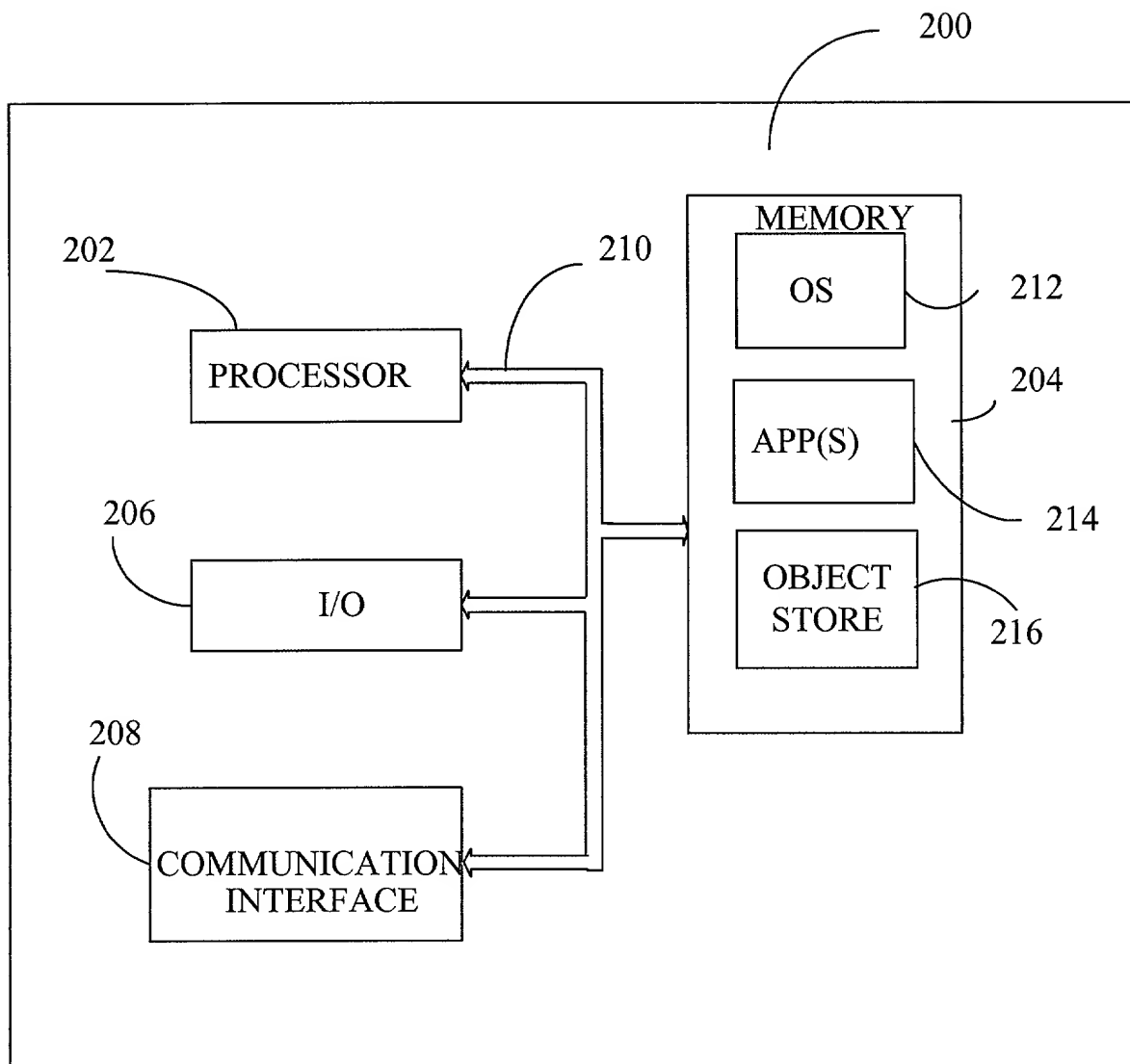


FIG. 6

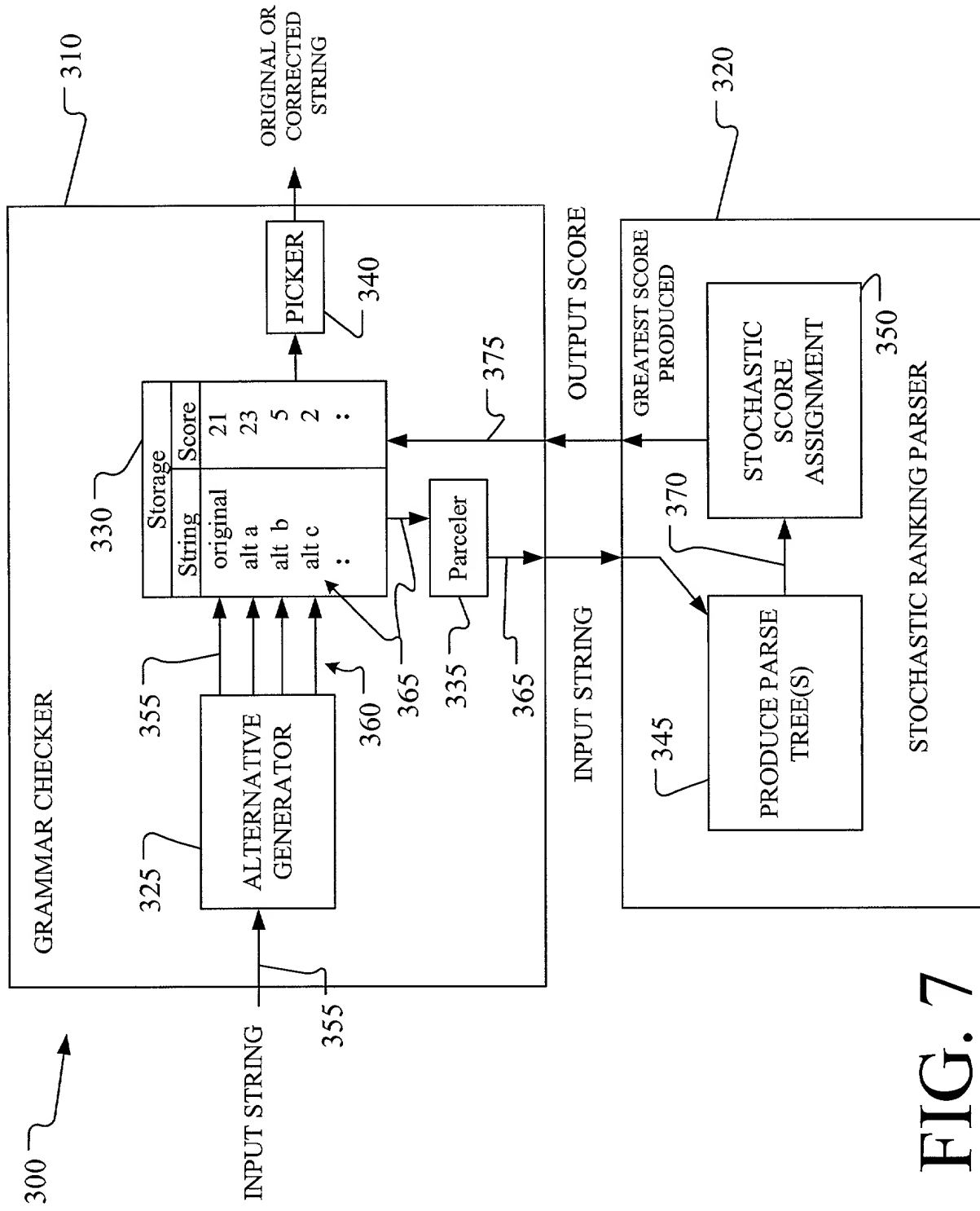


FIG. 7

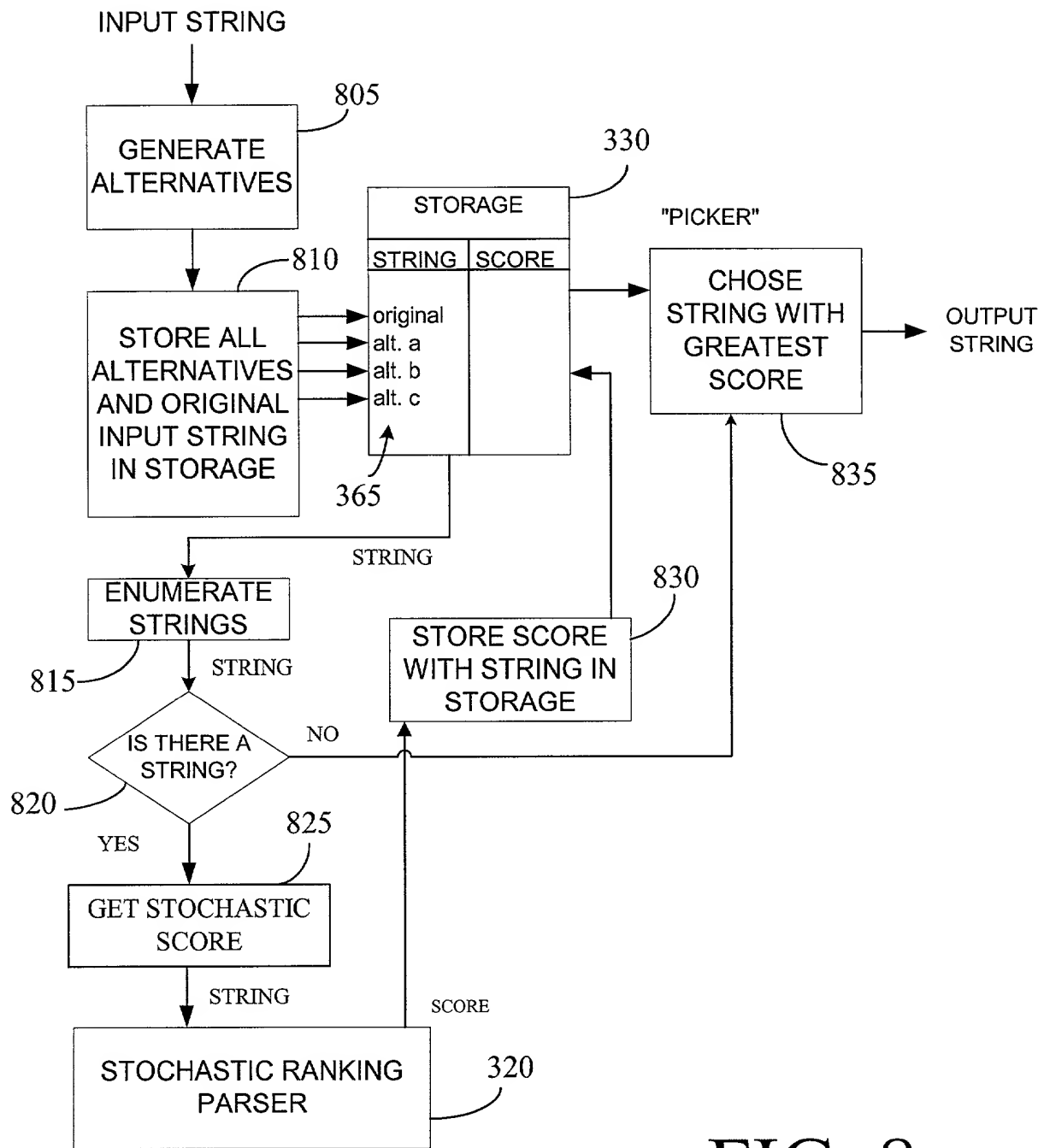


FIG. 8

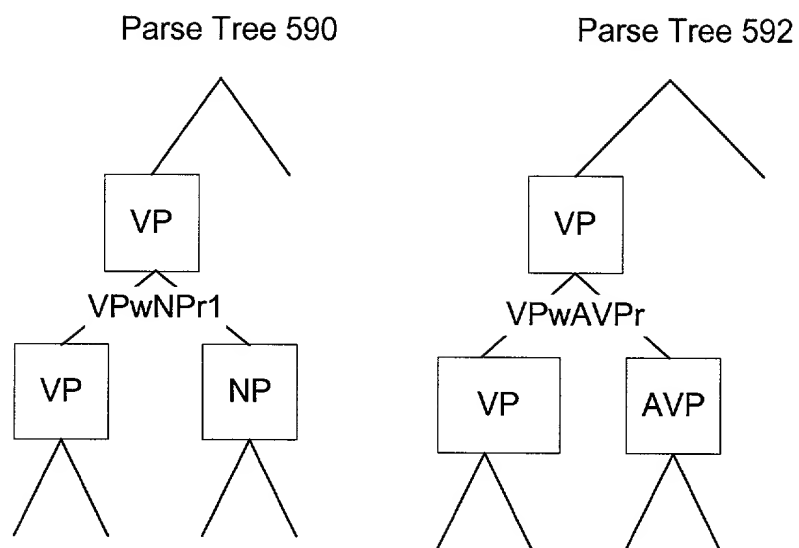


FIG. 9a

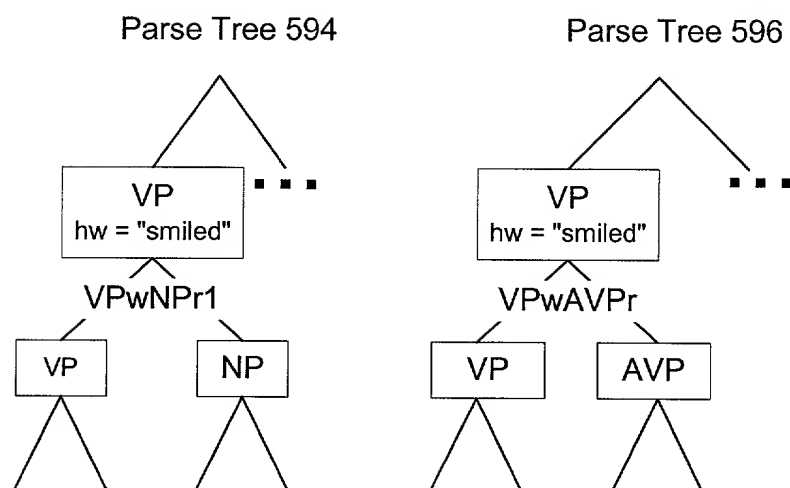
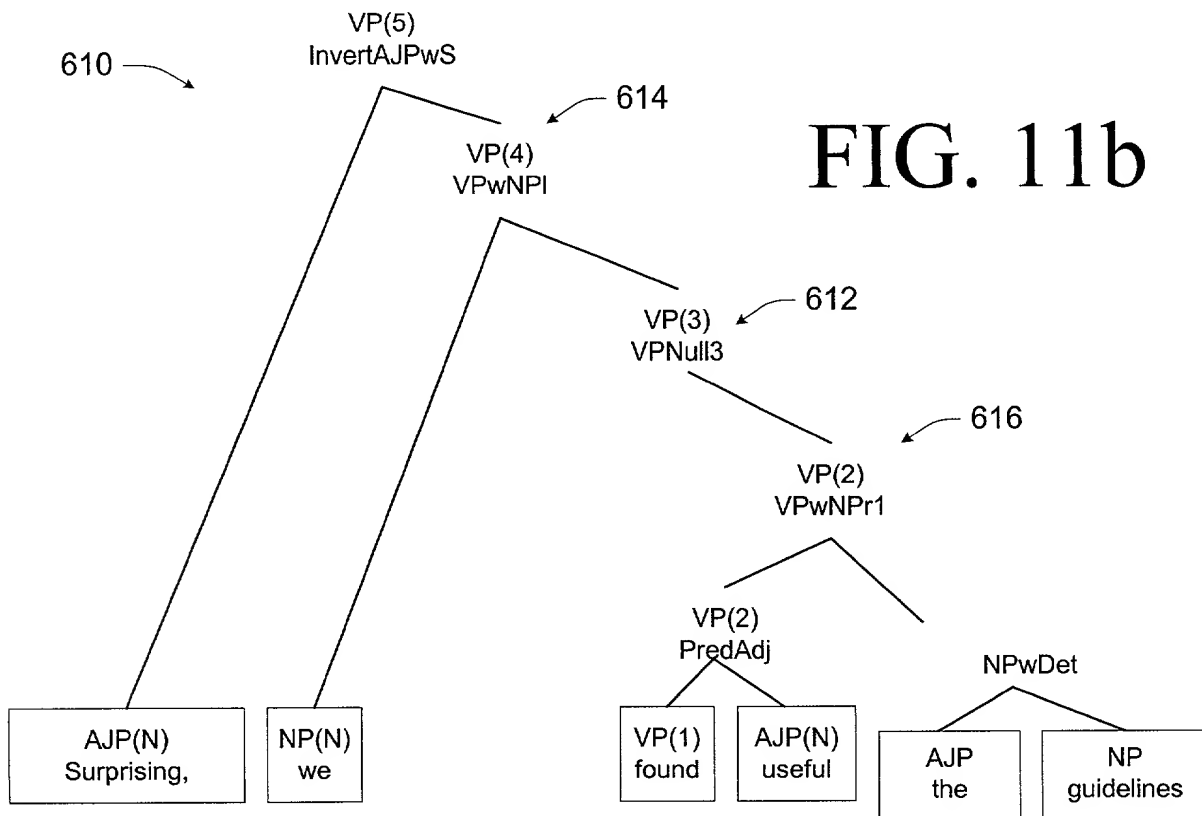
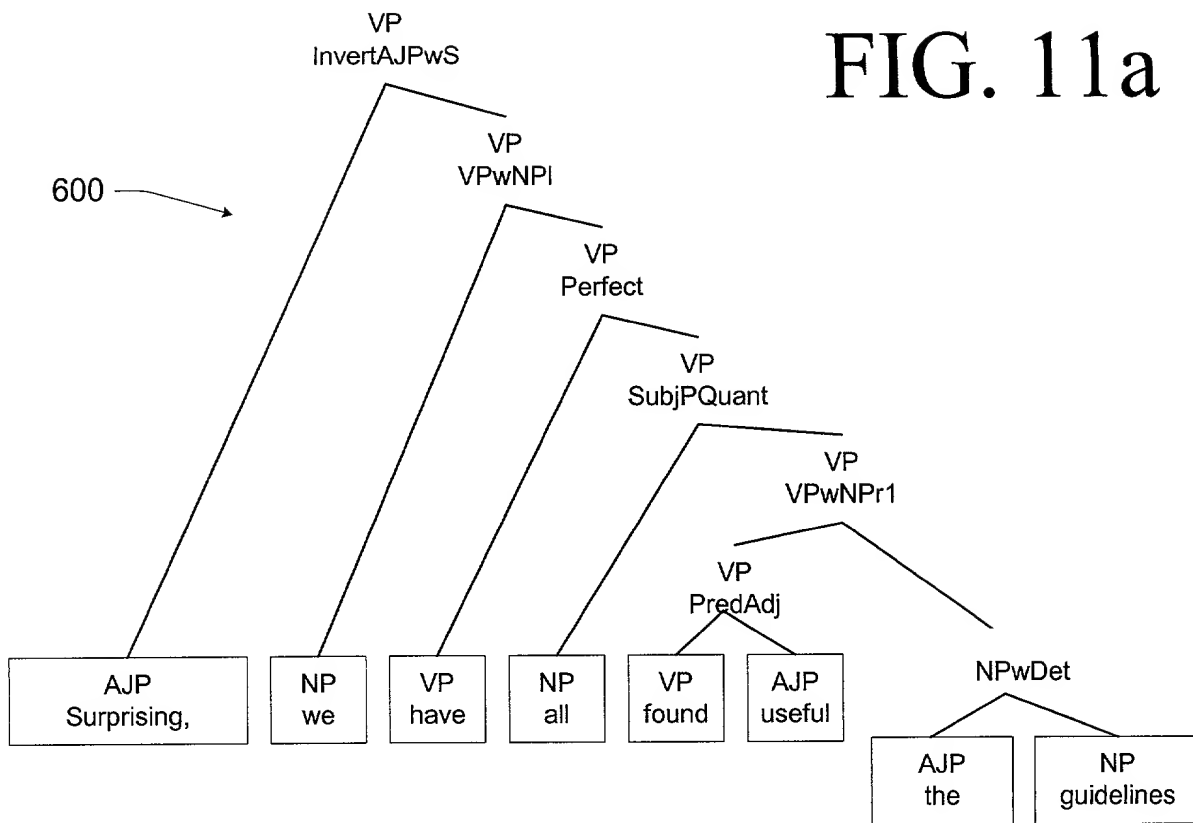


FIG. 9b

Rule Name	Rule	Description (and an example)
VERBtoVP	VP → VERB	Promote a verb into a verb phrase
PredAdj	VP → VP AJP	Add on an adjective. <i>"It has been <u>found effective</u>"</i>
VPwNPr1	VP → VP NP	Add direct object to a VP <i>"I <u>hit Bill</u>"</i>
Perfect	VP → VP VP	Adds the VP "have" to a VP <i>"Joe <u>had gone</u>"</i>
SubjPQuant	VP → NP VP	Add quantifiers to the VP like "all", "both", ... <i>"The children have <u>all gone</u>"</i>
VPwNP1	VP → NP VP	Add noun subject to a VP <i>"<u>John jumped.</u>"</i>
SubjectAJP	VP → AJP VP	Add AJP subject to a VP <i>"<u>More surprising is his attitude</u>"</i>
InvertAJPwS	VP → AJP VP	Add final modifier, AJP, to the left of a VP <i>"<u>More remarkable still, he went</u>"</i>
Topicalization	VP → NP VP	Add object of VP, NP, to the left of a VP <i>"<u>A better-looking man I have not seen</u>"</i>

FIG. 10



Phrase Level	Rule Name	Rule	Level Description
1	VERBtoVP	VP(1) → VERB(PL_Verb_Max)	Create a VP
	PredAdj	VP(2) → VP(1) AJP(PL_AJP_Max)	Add post modifiers
	VPwNPt1	VP(2) → VP(1) NP(PL_AJP_Max)	
2	VPNull2	VP(2) → VP(1)	
	Perfect	VP(3) → VP(1) VP(2,3)	Add "have" and quantifiers
	SubjPQuant	VP(3) → NP(PL_NP_Max) VP(2,3)	
	VPNull3	VP(3) → VP(2)	
3	VPwNP1	VP(4) → NP(PL_NP_Max) VP(3)	Add subject
	SubjectAJP	VP(4) → AJP(PL_AJP_Max) VP(3)	
	VPNull4	VP(4) → VP(3)	
4	InvertAJPwS	VP(5) → AJP(PL_AJP_Max) VP(4)	Add modifiers to VPs that have a subject
	Topicalization	VP(5) → NP(PL_NP_Max) VP(4)	
	VPNull5	VP(5) → VP(4)	

FIG. 12

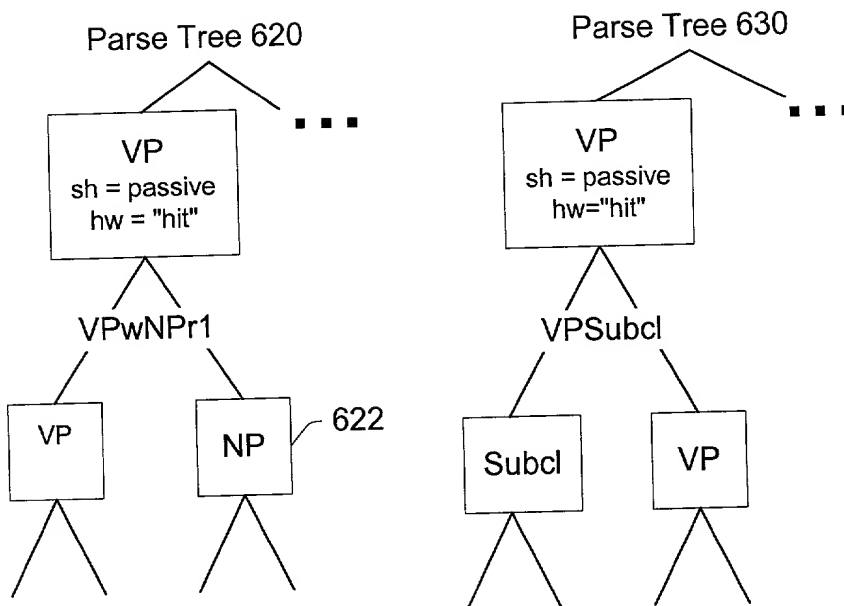


FIG. 13

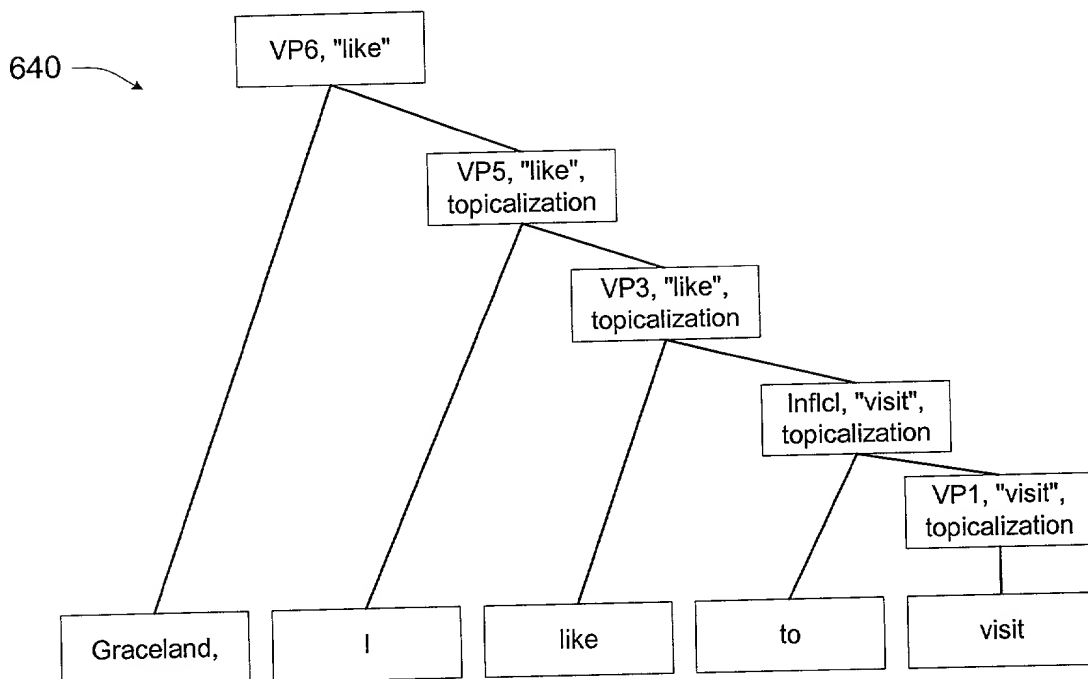


FIG. 14

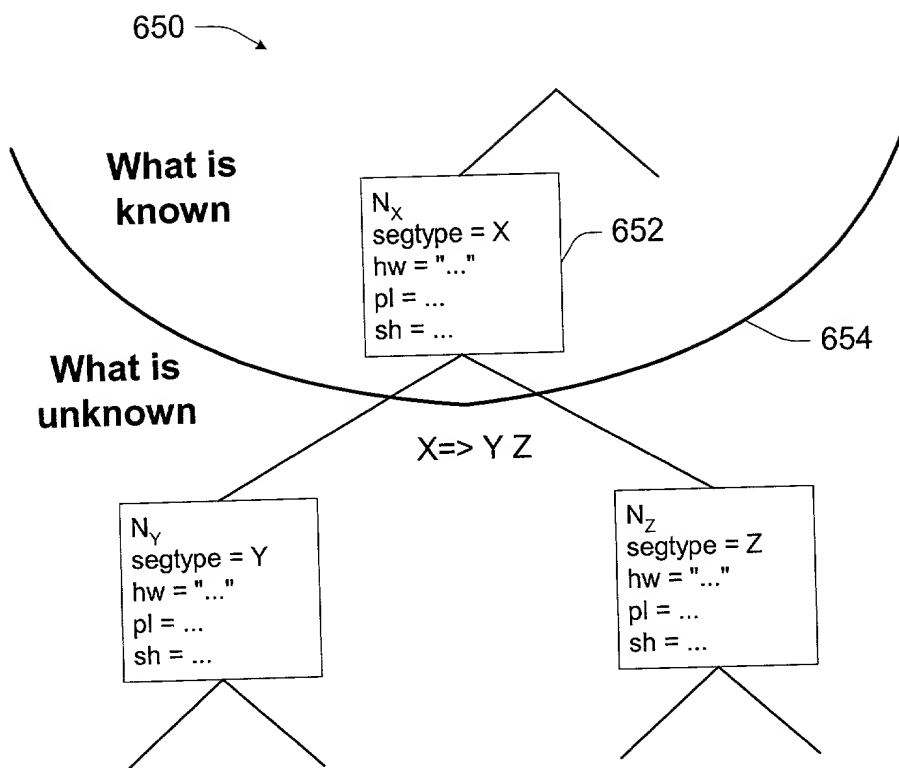


FIG. 15